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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/929,359	08/15/2001	Tomaru Ogawa	50195-267	8872

7590 10/13/2004

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/929,359	<b>Applicant(s)</b> OGAWA ET AL. <span style="float: right;">SC</span>	
	<b>Examiner</b> Tracy Dove	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 July 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5,7,9,11,13,17 and 19-21 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5,7,9,11,13,17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

This Office Action is in response to the communication filed on 7/20/04. Applicant's arguments have been considered, but are not persuasive. Claims 1, 3, 5, 7, 9, 11, 13, 17 and 19-21 are pending. This Action is made **FINAL**.

#### *Claim Objections*

The objection to claims 11 and 13 is withdrawn.

#### *Claim Rejections - 35 USC § 112*

The rejection of claims 11 and 13 under 35 U.S.C. 112, second paragraph, is withdrawn.

#### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5, 7, 9, 11, 13 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Dahn et al., US 6,168,887 B1.

Dahn teaches a layered lithium manganese oxide material prepared as the cathode material in a lithium battery without rapid transformation to spinel. The layered lithium manganese oxide material has a reversible capacity in the range of 150-210 mAh/g (col. 2, lines 39-47). The lithium battery comprises the layered positive electrode material, a lithium negative electrode and an electrolyte (Example 4). Dahn teaches the layered positive active material is represented by the general formula  $\text{Li}_x(\text{Mn}_{1-y}\text{M}_y)\text{O}_{2+z}$  wherein M may be a 3d transition metal

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such as Ni, Co, Fe, Cr or mixtures thereof;  $0.5 < x < 1.3$ ;  $0.0 \leq y < 0.4$ ; and  $-0.5 < z < 0.5$  (col. 3, lines 25-45). Note col. 5, lines 56-67. Dahn teaches it has been shown that heavy chromium doping stabilizes the layered structure of a positive active material (col. 6, lines 50-55). See the Examples regarding claim 19. Dahn discloses  $\text{Li}_{2/3}\text{MnO}_2$  in column 7, lines 41-42 and  $\text{Li}_{2/3}\text{Mn}_{0.82}\text{Co}_{0.18}\text{O}_2$  in claim 13. Dahn teaches an example wherein x is 0.7 (Fig. 2D). Oxide sources are provided in stoichiometric amounts, which means that masses of reactants are selected based on their molar weights so that the correct molar ratios are incorporated to give the desired product. The reagent oxide sources are thoroughly admixed and the admixture is subject to calcinations (baking) in air (oxygen containing) or in argon (not oxygen containing) (col. 6, lines 58-col. 7, lines 14).

Regarding the limitation of a BOP of more than or equal to 0.23, Dahn inherently teaches this limitation because it is a property of the layered lithium manganese oxide material. Since Dahn teaches the same layered lithium manganese compound as discloses in the claimed invention, the compound of Dahn would inherently have the same properties (i.e., BOP value).

Thus the claims are anticipated.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahn et al, US 6,168,887.

Dahn teaches a layered lithium manganese oxide material prepared as the cathode material in a lithium battery without rapid transformation to spinel. The layered lithium manganese oxide material has a reversible capacity in the range of 150-210 mAh/g (col. 2, lines 39-47). The lithium battery comprises the layered positive electrode material, a lithium negative electrode and an electrolyte (Example 4). Dahn teaches the layered positive active material is represented by the general formula  $\text{Li}_x(\text{Mn}_{1-y}\text{M}_y)\text{O}_{2+z}$  wherein M may be a 3d transition metal such as Ni, Co, Fe, Cr or mixtures thereof;  $0.5 < x < 1.3$ ;  $0.0 \leq y < 0.4$ ; and  $-0.5 < z < 0.5$  (col. 3, lines 25-45). Note col. 5, lines 56-67. Dahn teaches it has been shown that heavy chromium doping stabilizes the layered structure of a positive active material (col. 6, lines 50-55). See the Examples regarding claim 19. Dahn discloses  $\text{Li}_{2/3}\text{MnO}_2$  in column 7, lines 41-42 and  $\text{Li}_{2/3}\text{Mn}_{0.82}\text{Co}_{0.18}\text{O}_2$  in claim 13. Dahn teaches an example wherein x is 0.7 (Fig. 2D).

Regarding the limitation of a BOP of more than or equal to 0.23, Dahn inherently teaches this limitation because it is a property of the layered lithium manganese oxide material. Since Dahn teaches the same layered lithium manganese compound as discloses in the claimed invention, the compound of Dahn would inherently have the same properties (i.e., BOP value).

Dahn does not explicitly teach a specific example wherein M, in the formula  $\text{Li}_x(\text{Mn}_{1-y}\text{M}_y)\text{O}_{2+z}$ , is a combination of two metals.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Dahn teaches a general formula  $\text{Li}_x(\text{Mn}_{1-y}\text{M}_y)\text{O}_{2+z}$  wherein M may be a 3d transition metals such as Ni, Co, Fe, Cr or mixtures thereof. Thus, Dahn provides motivation to use more than one transition metal for M by the teaching that "mixtures thereof" may be used. Furthermore, Dahn discloses  $\text{Li}_{2/3}\text{MnO}_2$  in column 7, lines 41-

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42 and  $\text{Li}_{2/3}\text{Mn}_{0.82}\text{Co}_{0.18}\text{O}_2$  in claim 13. Dahn has a specific teaching that chromium doping of the lithium manganese oxide material stabilizes the layered structure (col. 6, lines 51-55). Thus one of skill would be motivated to dope the  $\text{Li}_{2/3}\text{MnO}_2$  or  $\text{Li}_{2/3}\text{Mn}_{0.82}\text{Co}_{0.18}\text{O}_2$  of Dahn with chromium in order to stabilize the layered structure.

### ***Response to Arguments***

Applicant's arguments filed 7/20/04 have been fully considered but they are not persuasive.

Applicant argues Dahn fails to disclose the claimed range of x that is more than 0.2, but less than 0.3. Examiner disagrees. The claimed range for lithium (1-x) is encompassed by the range for lithium disclosed by Dahn. Specifically, the claimed range requires lithium to be more than 0.7 but less than 0.8. This range is encompassed by the prior art range for lithium of more than 0.5 but less than 1.3.

Applicant points to Figure 5 of the present specification as evidence that Dahn does not teach the critical point of BOP or range of  $0.2 < x < 0.3$ . However, Figure 5 does not show any criticality for the claimed invention. Note the Figure contained in the amendment is not an accurate description of the data of Figure 5. Specifically, Figure 5 in the amendment shows that within the claimed range for Li (more than 0.7 but less than 0.8) the BOP value is less than 0.23. This is in contrast to the data contained in Figure 5 of the present specification. The claims require a BOP or more than or equal to 0.23. The data in Figure 5 teaches a mole ratio of 0.7 or 0.67 for lithium results in a BOP of 0.23. Dahn has specific examples having a mole ratio of 0.7 or 0.67 for lithium. Furthermore, the only example contained in Figure 5 that falls within the claimed mole ratio for lithium is Example 1 having 0.75 mole lithium. The example has a BOP

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of 0.23 also. Thus, it is unclear what applicant is attempting to show regarding the data contained in Figure 5.

Applicant refers to the comparative data of the specification. Note evidence of unexpected results cannot be used to overcome the anticipation rejection. Applicant does not separately argue the 35 U.S.C. 103(a) rejection of claim 17.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tracy Dove  
Patent Examiner  
Technology Center 1700  
Art Unit 1745

October 8, 2004